PLASTIC POLLUTION: A PRESSING ISSUE AND ITS GROWING CONCERN

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ABSTRACT

Plastic is ubiquitous, penetrating into almost all the ecosystems on the earth. Its injudicious use and rampant manufacturing have threatened multitude of lives on earth. The challenges and risks which micro plastics pose are much higher than one can think of. Plastic has staggering impacts on health and the environment. This year's theme of World Environment Day under the leadership of the Republic of Korea is very pertinent, especially at a time when plastic has wrecked silent havoc. It is the need of the hour to check plastic usage and implement stringent rules and policies to curtail this plastic crisis.

KEYWORDS: Microplastic, plastic, ocean, biodiversity, plastic pollution

INTRODUCTION

Plastic pollution has obtained a dominant stand in our everyday lives. Plastic has staggering impacts on health and the environment. Of all the plastic used, 50% is estimated to be single use plastic. The numbers around plastic waste are stark. The world just produced two million tones of plastic in 1950, and the number burgeoned to 450 millions by the beginning of this decade. As per the forecasting of the Organisation of Economic Cooperation and Development (OECD), plastic waste will nearly triple to one billion tonnes per year by 2060. According to a report published by the Ocean Conservancy and McKinsey Center for Business and Environment in 2016, the top five countries contributing to the ocean plastics lie in the Asia - Pacific belt (viz., Indonesia, People's Republic of China, Philippines, Thailand and Vietnam). A squad of Clean Oceans International approached Alaskan coastline for carrying out massive cleaning drive, but was taken aback by the humongous amount of plastic wastes floating ashore (Dutta and Choudhury, 2018). Plastic pollution is usually seen in the third world nations like those of Africa and Asia, where garbage disposal and collection are poor and challenging.

Edward Carpenter, a marine biologist in 1971 pressed attention to the minuscule plastic floating in the Atlantic Ocean off the coast of America. This was acknowledged by the world leaders highlighting the need for a legally binding treaty.Taking into note this pressing issue, that might turn grave and take the shape of a mammoth catastrophe, United Nation Environment Programme (UNEP) has announced the theme of World Environment Day, 2025 as 'Beat Plastic Pollution' to draw the focus of the world leaders to undertake collective efforts in dwindling it. The theme serves as a rallying cry as well as a milestone, which is crucial for sustainable progress.

Adoption of 5/14 Resolution in UN Environment Assembly of March' 2022 builds momentum for agreeing on a legally binding instrument to safeguard human race from the onslaught of plastic around.

To streamline global actions to tackle plastic crisis, the Intergovernmental Negotiating Committee has been convening sessions since late 2022, across Uruguay, France, Kenya, Canada and Korea, with its final round scheduled in Geneva this August. While embarking on an ambitious plan to end plastic pollution by 2024, Jeju Province of the Republic of Korea implements province wise disposable cut deposit system and enforces separation of waste at the source. The Republic of Korea has displayed significant maturity in chemical safety and producer responsibility since 1997, the first time it hosted the World Environment Day.

IMPACTS OF PLASTIC POLLUTION

The impacts of plastic pollution and more particularly micro plastics are far reaching. It finds

its way to marine water and threatens the lives inhabiting such ecosystems. According to a few scientists, stomachs of the local birds in the remote island of the Lord Howe 'crunch' on being touched since they are filled with micro plastics. Not only it finds its way to large water bodies, micro plastics also make its way into the sea ice and deserts. Researchers could trace debris of plastic on the Mt. Everest and in the Mariana Trench, the Earth's deepest point. Dumping of plastics in an unscientific manner has led to development of 'islands of plastic' in the sea and 'heap of plastics' on the earth (Jambeck et al., 2015). Researchers anticipate that oceans would be more filled with plastics than fishes by 2050, threatening food safety and biodiversity.

Plastic not only leads to biodiversity loss, but contributes heavily to the global warming and climate change. The process of plastic production consumes huge amount of energy and can emit green house gases. The Center of International Environment Law (2019) has estimated that plastic production would generate the same volume of plastic pollutants as that of 615 coal-fired power stations by 2040 if the present trend continues to prevail. United Nations Environment Programme (UNEP) has reported that every year 19-23 million tonnes of plastic waste leaks into a plethora of aquatic ecosystems. These harm marine lives via ingestion, entanglement and spread of life threatening chemicals. Plastics negatively influence human health too.Chemicals existing in the plastics are carcinogenic, neurotoxic and toxic to the endocrine system of man brining about many ill effects.

Fig 1: Water bodies inundated with plastic waste (Source: Beat Plastic Pollution, MoEFCC)

A world laden with plastics presages increased risk of heart attack, stroke, reproductive, developmental, immunological, neurological disorders and death. Plastic pollutes agriculture fields and croplands threatening global food security (Zhang et al. 2020) owing to release of phthalate esters and heavy metals (Wang et al 2016; Huang et al. 2019). Further, improper disposal of single use plastic waste brings about disamenity in gardens or vicinity (UNEP, 2018).

Fig. 2: Plastic waste dumped on land; pose threat to stray animals (Source: Beat Plasticc Pollution, MoEFCC)

PLASTIC POLLUTION IN INDIAN CONTEXT

As per the CPCB (Central Pollution Control Board), India alone generates 3.5 million metric tonnes of plastic annually. 50% of the plastic waste produced is recycled whereas the other 50% finds is way to the land fills. Albeit, the data may not suffice to put a comprehensive picture of plastic use, waste and re-use. Indian being one of the major victims of plastic pollution, should view the theme with greater degree of seriousness as it underscores the need for science based collective efforts to address global crisis of this order.

The Ministry of Environment, Forest and Climate Change, Govt. Of India has amended the 'Plastic Waste Management Rules' to ensure accountability and transparency from the Producers, Importers and Brand Owners (PIBOs). Further, Security Exchange Board of India (SEBI) gave directives to its 1000 listed companies to disclose on the plastic and other wastes. This underscores India's keen interest to address plastic pollution. Despite rigorous efforts, plastic pollution seems a perpetual problem and convergent efforts of all the stakeholders including regulators, law makers, policy makers, corporates and individuals can help its abatement. Enactment of EPR can be viewed as India's first step in achieving the larger objective of being a plastic free nation.

HOW TO TACKLE PLASTIC POLLUTION?

The Sudokwon Landfill is a waste treatment facility based in the Republic of Korea

that can treat around 18000 tons of waste every day. This Landfill makes use of the state-of-the-art facilities for solid waste management. The Sudokwon Landfill was set up in the year 2000 as a solution to the increasing volume of garbage in the Seoul metropolitan area. Today it earns the recognition of being one of the best global waste management practices.

For curbing such crisis, transparent disclosures and meaningful transformations are two important steps in this direction. One of the best ways to curtail plastic pollution is to make alternative products that serve the same purpose. Another vital step in this direction can be refining recycling. The Ellen MacArthur Foundation's New Plastics Economy Global Commitment has an ambitious aim to recycle 5 million tonnes of plastic waste by the end of this decade. Researchers are spending ample of time looking for biological alternatives like enzymes to breakdown plastics. The University of Texas at Austin has successfully developed an enzyme capable of breaking plastic in a day's time. The private and public players in this filed are exploring new avenues to tackle this global crisis. One such avenue is generating biodegradable plastics. The biodegradable plastics so designed can be broken down by the microflora into carbon dioxide, methane and microbial biomass (Friedrich et al, 2097; Kalogerakus et al., 2015; Negoro et al., 2011). However, effective testing is a mandate to ensure safety and efficacy.

Another way of abating plastic pollution is to embrace the circular economy. Circular economy refers to reuse of plastics at the end of their life cycles. Not only has it helped tackle plastic crisis but gives a boost to the economic growth. The penetrations of low value plastics into oceans are prevented by capturing them at the river level and then reused, recycled and appropriately disposed of whenever necessary. To combat plastic pollution, around 127 countries have regulated utilisation of plastic whereas 115 countries have implemented stringent laws to check plastic waste (Dikgang et al., 2012). To turn the tide on plastic crisis, amalgamation of best policies, fecund investment and best practices are necessary. Government officials, academia, civil societies, public and private sectors should come under one umbrella to build a momentum in curbing such crisis.

CONCLUSION

Increased plastic waste driven by booming manufacturing and petrochemical industries has threatened all forms of lives on earth. Abatement of plastic crisis, although perceived as strenuous, yet it is surmountable. Holistic approach and tedious convergent actions of all the stakeholders in line can help achieve the bigger goal of having a plastic free world.

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